

Demolition and Remediation Assessment Report

**Formerly Used Defense Site
Nike W-92
Rockville Launch Area
Gaithersburg, Maryland**

Prepared For:

**City of Gaithersburg
31 South Summit Avenue
Gaithersburg, Maryland 20877**

June 16, 2008

ARM Project M07125



ARM Group Inc.®
Earth Resource Engineers and Consultants

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31 South Summit Avenue
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June 16, 2008

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TABLE OF CONTENTS

	<u>Page</u>
1.0 INTRODUCTION.....	1
2.0 REMEDIATION ISSUES	2
2.1 Summary of Environmental Risks	3
2.2 Removal of Hazardous Building Materials Prior to Transfer	5
3.0 BUILDING REUSE / RENOVATION ISSUES.....	6
3.1 Building Characteristics	6
3.2 Hazardous Materials	6
3.3 Mitigation Requirements	6
3.4 Mitigation Costs	8
4.0 DEMOLITION ISSUES.....	9
4.1 Overall Approach.....	9
4.2 Hazardous Materials Abatement.....	10
4.3 Underground Utilities	12
4.4 Demolition Costs	13
4.0 RECOMMENDATIONS.....	14

FIGURES

Figure 1	Site Location Map.....	Following Text
Figure 2	Site Plan (West)	Following Text
Figure 3	Site Plan (East).....	Following Text
Figure 4	NIST Building Numbers	Following Text
Figure 5	Utilities Map (West)	Following Text
Figure 6	Utilities Map (East).....	Following Text

TABLES

Table 1	Existing Building Inventory	Following Text
Table 2	Hazardous Building Material Inventory	Following Text
Table 3	Building Re-Use/Renovation Mitigation Costs	Following Text
Table 4	Demolition Debris Quantity Estimates	Following Text
Table 5	Building Demolition Costs	Following Text

APPENDICES

Appendix A	MDE Comment Letter	Following Text
Appendix B	Existing Building Photographs	Following Text

1.0 INTRODUCTION

ARM Group Inc. (ARM) has prepared the following Preliminary Remediation and Demolition Assessment Report for the Formerly Used Defense Site (FUDS) Nike W-92, Rockville Launch Area (the Site), in Montgomery County, Maryland (FUDS C03MD0245). The City of Gaithersburg (the City) is considering acquiring the 13.71 acre property located at 770 Muddy Branch Road, Gaithersburg, Maryland (**Figure 1**). The anticipated future use of the site is a community facility and/or park.

The purpose of this preliminary remediation and demolition assessment is to identify potential environmental or hazardous materials conditions at the site that may interfere with the proposed property reuse as a public facility or park and to evaluate the potential approaches and preliminary cost estimates for mitigating any hazardous conditions identified. This information will provide the City with a basis for use in site planning and in property acquisition negotiations. ARM's cost estimates include a discussion of the uncertainties underlying the estimates and provide both an expected cost as well as an upper-bound cost to provide the City with an adequate basis for negotiation.

Specifically, ARM identified existing hazardous conditions on the site that may constitute a potential material liability to the City as a new property owner, or that may result in a significant cost in the re-development of the property for the City's proposed future use. To complete the assessment, ARM conducted a Phase I Environmental Site Assessment (ESA), a Phase II ESA, and inspected the existing structures for asbestos containing materials (ACMs), lead based paint (LBP), mold/fungus, PCBs and other potentially hazardous building materials or conditions identified in the Phase I ESA.

At this time, it is not known which buildings or structures will remain, or be demolished. As such, the following Preliminary Remediation and Demolition Assessment Report addresses the requirements and expected costs for demolition of all structures to restore the site to an open, grass field, as well as evaluating the issues and potential mitigation costs associated with reusing each of the major buildings.

2.0 REMEDIATION ISSUES

Established by the state legislature in 1997, Maryland's Voluntary Cleanup Program (VCP) is administered by the Waste Management Administration's Department of Environmental Restoration and Redevelopment Program (WAS ERRP) to provide State oversight for voluntary cleanups of properties contaminated with hazardous substances.

To facilitate the voluntary cleanup and redevelopment of contaminated properties, a Memorandum of Agreement was signed by MDE and Region III of the Environmental Protection Agency (EPA). The agreement addresses federal liability of a participant in Maryland's program by providing that EPA will consider sites (in Maryland's program) of no interest. Eligible properties in Maryland's Voluntary Cleanup Program will fall under this agreement once a No Further Requirements Determination or Certificate of Completion has been issued for the property by MDE. This agreement increases certainty for program participants.

A non-refundable \$6,000 application fee is due to the MDE at the time the application is submitted.

A non-refundable \$2,000 fee is due to the MDE if an expedited Inculpable Person approval is requested. Inculpable Person status would typically be granted within 45 days of receipt of a complete VCP application package.

After review of an application package, MDE may:

- Determine that the application is incomplete and request additional information;
- Approve the application and issue a No Further Requirements Determination (NFRD) stating that there are no further requirements related to the investigation of controlled hazardous substances at the eligible property;
- Approve the application and require the applicant to prepare a response action plan (RAP). Upon approval of an application, MDE will confirm in writing the applicant's status as an inculpable or responsible person; or,
- Deny the application and provide the reason for the denial in writing.

The NFRD may be issued conditioned on future land use restrictions and may contain certain physical maintenance requirements. Issuance of the NFRD does not prevent MDE from taking action against inculpable or responsible persons for new or exacerbated contamination. In addition, for responsible persons, the NFRD does not prevent MDE from taking action for previously undiscovered contamination or imminent and substantial threats to public health or the environment.

If MDE specifies that a RAP is necessary, the participant develops a proposed RAP that includes a schedule for implementation and completion of the plan. Upon submittal of the plan to MDE for review and approval, the public is given an opportunity to comment on the proposed RAP and a public informational meeting is held prior to MDE approval.

The Certificate of Completion (COC) is issued upon completion of the requirements of the approved RAP to the satisfaction of MDE. The COC does not prevent MDE from taking action

against inculpable or responsible persons for new or exacerbated contamination. Additionally, for responsible persons, the COC does not prevent MDE from taking action for previously undiscovered contamination or imminent and substantial threats to public health or the environment.

2.1 Summary of Environmental Risk

ARM completed a Phase II ESA to identify and define the presence or absence, and the potential magnitude, of impacts in various environmental media at the Former Nike Missile Site W-92. The investigation work scope was reviewed by the MDE and their recommendations were incorporated prior to the implementation of the field activities. The investigation included:

- re-sampling of three existing groundwater wells,
- collection of twelve soil samples from six locations across the site, and
- soil gas sampling at identified Areas of Concern to detect potential unidentified impacts,
- soil gas sampling along the perimeter of the property to detect any vapor migration to adjacent residential properties, and
- soil gas sampling beneath existing structures to assess the potential for vapor intrusion into on-site buildings.

The results and conclusions of the investigation were presented in ARM's Site Characterization and Risk Assessment Report dated November 2007. The report indicated the following findings and conclusions with respect to the need for remediation of environmental media at the Site prior to use as a recreational facility or park with public access.

No required soil remediation was identified. Arsenic, Chromium and Thallium concentrations exceeded the MDE Residential Clean-Up Standards in each of the 12 soil samples from the site. However, the observed concentrations of these naturally-occurring metals are comparable to the range of background concentrations found throughout the state of Maryland. As such, the observed levels of Arsenic, Chromium and Thallium in soil do not represent a site-related risk.

No required groundwater remediation was identified. The results of the groundwater sampling and analysis indicated that there is no longer any impact to the groundwater in the three recently abandoned groundwater monitoring wells on the former Nike W-92 site.

No evidence of vapor migration to the residential areas surrounding the site was identified. The soil gas samples collected along the perimeter of the property did not yield concentrations of VOCs that exceeded the EPA Vapor Intrusion Guidance Criteria for residential land use. Therefore, no significant risk or required remediation was identified.

Vapor intrusion was identified as a potential concern with respect to the use of the existing buildings on portions of the site, or the construction of new buildings on those portions of the site. Based on the observed concentrations of VOCs above the EPA Vapor Intrusion Guidance Criteria for residential land use in the soil gas samples, the accumulated vapors beneath the former Machine Shop, beneath the former Barracks and beneath the paved area around the former Missile Assembly Building could represent an unacceptable risk under the future recreational land use scenario. If the existing buildings are not demolished, or if new buildings

are constructed within the footprint of the potentially impacted areas where the elevated vapor concentrations were observed, a possible inhalation risk would exist via vapor intrusion to indoor air.

The findings and recommendations of the Phase II investigation were presented to MDE in a meeting on January 16, 2008. MDE generally concurred with the findings. To further assess whether remedial measures might be required to address the potential for vapor intrusion, the MDE recommended that indoor air samples be collected in the existing buildings where vapor concentrations exceeded the EPA Vapor Intrusion Guidance Criteria for residential land use. The City agreed to conduct the recommended indoor air sampling. MDE also recommended that soil samples be collected from immediately adjacent to the walls of the buildings where lead-based paints were identified to determine whether lead contamination was present in the localized soils due to the paint. The City decided to defer this soil sampling until redevelopment planning, since the expected cost of dealing with any localized soil impacts is not expected to be material relative to the overall project.

On February 6, 2008 ARM collected one indoor air sample from the former Barracks and one from the Propellant Elandling Building. While TCE was identified above the USEPA Vapor Intrusion Guidance Clean-Up Criteria in the sub-slab soil gas sample collected from beneath the former Machine Shop/Missile Assembly Building, an indoor air sample was not collected because the roof has collapsed and any sample would not be representative of indoor air conditions within a competent building.

The indoor air sample in each building was collected from the breathing zone using evacuated stainless steel canisters (summa canisters) that were regulated with a flow restrictor which was set for a 24-hour intake time.

The results of the indoor air sampling were provided to the MDE in a letter dated March 3, 2008. The results indicated that while several VOCs were detected above the laboratory reporting limit in the indoor air samples, no compounds were detected above the USEPA Vapor Intrusion Guidance Clean-Up Criteria for Indoor Air in the sample collected from the Propellant Handling Building. Benzene and 1, 2, 4-Trimethylbenzene were detected above the USEPA Vapor Intrusion Guidance Clean-Up Criteria for Indoor Air in the sample from the former Barracks; however, these compounds were detected at levels greater than those observed in the sub-slab soil gas sample collected from beneath the former barracks, indicating that the source was not below the floor. It is likely that the occurrence of these VOCs in the indoor air can be attributed to indoor activities, such as the kerosene heater being stored in the room where the sample was collected.

ARM concluded that vapor intrusion is not a significant concern with respect to re-use of the existing buildings or if a new building were to be constructed within the footprint of the existing buildings during redevelopment.

On March 26, 2008, at the request of the City of Gaithersburg, MDE issued a comment letter (included as Appendix A) on the Phase II investigation which indicated concurrence with the findings of the investigations. However, issues that were identified by the MDE that may need to be addressed prior to or during redevelopment include:

- The current property owner should remove and properly dispose of all hydraulic oil that may be present in the three hydraulic systems within the silos.
- Since the property is currently occupied by the NIST, environmental conditions may be influenced by the ongoing use of the Site. As such, the MDE could not guarantee that additional sampling would not be required if the Site was entered in to the Voluntary Clean-Up Program (VCP).
- As the MDE did not perform a complete toxicological evaluation on the soil and groundwater data generated during the Phase II ESA, MDE could not comment on the summary of risk provided in Section 5.2 of ARM's Site Characterization and Risk Assessment Report.

Based upon the results of ARM's Phase I and Phase II site investigations and the MDE's comments, no potentially material environmental remediation costs have been identified or are expected. However, because the MDE could not comment on the summary of risk provided in Section 5.2 of ARM's Site Characterization and Risk Assessment Report until an application for participation in the VCP is submitted, the City may still wish to enter the Site into the VCP to have the full concurrence that the MDE has completed a formal review of the site to provide assurance to the public, including future site users and neighbors. Additionally, while the City would still be granted Inculcable Party (IP) Status under Title 7 § 7-201(u)(2) of the Annotated Code of Maryland upon purchasing the property, and would not be a responsible party under state law even if previously undiscovered contamination or an imminent and substantial threat to public health or the environment is identified in the future, as a participant in the VCP, the City would be further protected from federal CERCLA liability as the Site would become a "site of no interest" to the EPA once a No Further Requirements Determination or Certificate of Completion has been issued for the property by MDE.

2.2 Removal of Hazardous Building Materials Prior to Transfer

Various hazardous materials issues were identified at the Site that will be subject to special mitigation requirements. Some of these are or may be compliance issues that should be addressed by NIST (such as the removal of accumulated wastes). Others are associated with NIST's current use of the Site, but should be remedied prior to the transfer of the property (such as the removal of stored consumer end chemical products). The following mitigation issues should be addressed by NIST prior to the transfer of the property:

- the removal and disposal of ASTs,
- the off-site disposal of containerized petroleum products and wastes,
- the emptying and subsequent off-site disposal of oil from the hydraulic lifts,
- the removal and disposal of consumer end chemical products used or stored by NIST in buildings on-site, and
- the removal from service, de-energizing of transformers and the subsequent handling and disposal of associated oils and fluids (if not needed for re-use of buildings).

3.0 BUILDING RE-USE/RENOVATION ISSUES

3.1 Building Characteristics and Conditions

There are a number of existing buildings remaining on the Site (**Figure 2 and Figure 3**). **Table 1** provides a listing of the existing buildings and **Appendix B** provides photographs of each of the existing buildings. The NIST site plan indicating the designated building numbers is provided as **Figure 4**. The City of Gaithersburg has not determined whether any of the existing buildings would be re-used for the anticipated future use of the site as a recreational facility.

3.2 Hazardous Materials

ARM performed a building assessment survey during the Phase II ESA investigation to identify hazardous materials within the existing buildings. The building assessment included spot testing for lead-based paint (LBP) for all structures. Visual inspection and sample collection was conducted to identify asbestos-containing materials (ACM) as defined by the Environmental Protection Agency (EPA). Any material that is greater than 1% asbestos is considered to be an ACM. The building assessment survey also included noting the presence of fluorescent lights, thermostats, or high-density discharge lamps that may contain mercury or PCBs, and containers of suspect chemicals, paint, oil, etc.

Hazardous building materials that would not be conducive to future use of these buildings as a public recreational facility were identified in some of the buildings. An inventory of the identified hazardous materials in each building is provided in **Table 2**.

3.3 Mitigation Requirements

- **Asbestos**

The ACM inspection identified approximately 2,000 square feet (sf) of resilient floor covering (9x9 floor tile) and associated mastic. These materials included:

- 250 sf of white 9x9 floor tile and the associated mastic located in the Machine Shop/Missile Assembly Building (Bldg 534);
- 250 sf of green 9x9 floor tile and the associated mastic located in the Machine Shop/Missile Assembly Building (Bldg 534);
- 500 sf of black 9x9 floor tile and the associated mastic located in the Generator Building (Bldg 501); and
- 1,000 sf of black 9x9 floor tile and the associated mastic located in the Shower/Other Building to the rear of the barracks (Bldg 531).

In addition, the roofing materials on most of the buildings are presumed to contain asbestos. There was no easy access to inspect or sample roofing materials during the site visit.

According to the USEPA, regulated ACM (RACM) is: a) friable asbestos material; b) Category I non-friable that has become friable; c) Category I non-friable that will be subject to sanding, grinding, cutting, abrading; d) Category II non-friable that has a high probability of becoming

friable in the course of renovation or demolition activity. Friable ACM means any material which contains more than 1 percent Asbestos by weight and can be crumbled, pulverized, or reduced to powder by hand pressure. Non-friable ACM means any material which contains more than 1 percent Asbestos by weight and can not be pulverized under hand pressure. Non-friable ACM is divided into two categories. Category I includes packings, gaskets, resilient floor covering, and asphalt roofing products. Category II is any other non-friable ACM not included in Category I.

All of the identified and presumed ACM identified at the Site fall under the Category I non-friable definition. Non-friable asbestos materials may be left in place without treatment if in good condition, though there is the potential that future repairs or alterations can affect these materials. These materials would need to be properly managed during any renovation of the existing buildings. It is assumed that floor tiles will be removed prior to any renovation of the buildings. Roofing materials are assumed to remain in place.

- **Lead-Based Paint (LBP)**

As seen on Table 2, surfaces within many of the on-site buildings were determined to be painted with LBP. In addition, as noted by MDE, the soil immediately adjacent to the buildings may also have become contaminated with lead as a result of past paint maintenance. Unless the on-site buildings are intended to be "child occupied facilities" as defined by the USEPA in 40 CFR 745, abatement of the LBP is not required. Since the likely future use of the property is to be a public-access recreational facility, removal of lead-based paint from any building to be re-used, while not mandated, would be appropriate to minimize potential risk.

- **Mold**

Fungal (mold) growth was observed on the ceiling of Bungalows 2 and 4, and throughout the Machine Shop/Missile Assembly Building. Water damaged materials were observed in the Kennels, the Shower/Other Building to the rear of the Barracks, and the Generator building. If these buildings are to be re-used, then the source of observed water damage should be corrected and materials supporting mold growth should be removed or replaced. These materials are not subject to special handling or disposal requirements during renovation or demolition. However, contractors completing the demolition activities should be made aware of the potential presence of mold within these buildings.

- **Mercury**

Thermostats containing mercury were observed in Bungalows 2 through 7 and the missile assembly building. These thermostats should be removed and disposed of prior to any renovation or demolition activities.

- **Above Ground Storage Tanks (ASTs)**

Two ASTs remain on the Site. The ASTs include a 275-gallon tank situated along the northern side of the former machine shop / missile assembly building and a 300-gallon tank situated along the southwestern corner of the former barracks. These tanks were believed to have been used to store heating oil to heat the on-site structures. There were no indications of a release from either

of these tanks. Notification to the Montgomery County Fire and Rescue Service should be made prior to removal of the tanks, and the tanks should be removed and disposed of according to applicable regulations.

- **Containerized Petroleum Wastes**

Nine 55-gallon drums and two 5-gallon containers were observed in the generator building. The 55-gallon drums included 2 that were labeled as “non-PCB containing waste”, two that were empty, and five that were labeled as “lubricating oil”. The two 5-gallon containers were labeled as “petroletherm”. These drums should be removed and disposed of in accordance with applicable regulations.

During the building materials inspection, it was confirmed that hydraulic oil still remains in each of the three hydraulic systems. Each of the hydraulic oil reservoirs was accessed, and samples of the hydraulic oil were submitted for analysis to determine if it is PCB-containing. While there were no PCBs detected in the hydraulic oil, the oil will need to be drained from each of the three hydraulic systems and containerized for off-site disposal.

- **Stored Chemical Products**

Consumer end packaged paints, solvents, oils, and greases were observed within many of the onsite buildings. These materials should be removed and disposed of in accordance with applicable regulations.

3.4 Mitigation Costs

Many of the existing structures (such as the silos) were designed for unique purposes, and would have no foreseeable use in a future public recreational facility. Therefore, the hazardous materials issues associated with these structures were identified but ARM did not develop cost estimates for mitigation, since the only likely option for these structures would be demolition. The potential mitigation costs associated with the buildings that may be of some future potential use to the City in a future recreational facility are discussed in **Table 3**. As indicated in the table, the potential cost of mitigating hazardous materials in the existing buildings for public access could be in excess of \$80,000 with the greatest potential cost associated with LBP removal.

4.0 DEMOLITION ISSUES

To assist the City in evaluating the options for re-use of the Site, ARM identified requirements for demolition of the existing on-site structures and developed preliminary cost estimates.

4.1 Overall Approach

The general approach to the demolition of the structures would be:

- Complete plans and documents (Engineering Phase).
- Obtain necessary permits; submit notifications (Engineering Phase).
- Review plans with contractor.
- Mobilize to the site.
- Establish erosion controls.
- Set up support facilities, storage areas, and waste and recyclable management areas.
- Conduct site-specific training of all personnel.
- Install work area barricades, falling object protection and warning signs (repeat at each work area).
- Install contamination controls at each work area as work progresses.
- Disconnect utilities.
- Conduct abatement of asbestos and other hazardous materials.
- Demolish piping and internal facilities for recycle as scrap metal, or for disposal.
- Demolish buildings.
- Conduct ongoing recyclable and waste shipment.
- Remove concrete slabs, foundations (crushing for onsite use as backfill).
- Conduct final cleanup, ship waste materials, demobilize, and complete final documentation.
- Site grading and revegetation.

During the Engineering Phase, the necessary plans and documents to conduct the project will include the following:

- Work Plan
- Stormwater NPDES General Permit
- Erosion and Sediment Control Plan
- Health & Safety Plan/Contingency Plan
- Lead Exposure Management Plan
- Pre-Demolition Engineering Survey (OSHA requirement)
- Waste Management, Traffic Control, and other plans required by specifications or by the regulations.

During the Engineering Phase the local demolition permit will be obtained, and the demolition/abatement notification will be submitted to the regulatory authorities.

4.2 Hazardous Materials Abatement

In the event that any of the existing structures are demolished, precautions should be taken to ensure the proper handling of the identified hazardous building materials. These activities must be conducted by qualified personnel using appropriate health and safety procedures in accordance with applicable regulatory requirements. This includes, but is not limited to, ensuring that contractors working on the site have the appropriate training and experience to handle potentially hazardous materials, and ensuring that materials that require special handling and disposal are properly segregated prior to the demolition and all applicable regulations are followed.

A preliminary list of hazardous materials identified during the Phase II assessment is presented in **Table 2**. This list should not be considered complete, and a thorough pre-demolition survey and hazardous material inventory should be conducted during demolition planning.

- **Asbestos**

The ACM inspection identified approximately 2,000 sf of resilient floor covering (9x9 floor tile) and associated mastic. In addition, the roofing materials on most of the buildings are presumed to contain asbestos.

The USEPA National Emission Standards for Hazardous Air Pollutants (NESHAP) (40 CFR part 61, Subpart M) applies to the owner or operator of a demolition or renovation activity. The NESHAP specifies work practices to be followed during renovations of buildings which contain a certain threshold amount of friable asbestos and during demolition of all structures and facilities (no threshold amount). The NESHAP also regulates asbestos waste handling and disposal.

According to the USEPA, regulated ACM (RACM) is: a) friable asbestos material; b) Category I non-friable that has become friable; c) Category I non-friable that will be subject to sanding, grinding, cutting, abrading; d) Category II non-friable that has a high probability of becoming friable in the course of renovation or demolition activity. Friable ACM means any material which contains more than 1 percent Asbestos by weight and can be crumbled, pulverized, or reduced to powder by hand pressure. Non-friable ACM means any material which contains more than 1 percent Asbestos by weight and can not be pulverized under hand pressure. Non-friable ACM is divided into two categories. Category I includes packings, gaskets, resilient floor covering, and asphalt roofing products. Category II is any other non-friable ACM not included in Category I.

The suspect asbestos containing materials identified in the buildings on the site (floor tiles, roofing, are considered to be Category I Non-Friable ACMs. Category I materials that are not friable prior to demolition may be left in place during demolition as long as the demolition practices will not render these materials friable. However, these materials need to be segregated from the waste stream prior to demolition or the demolition debris needs to go to a C&D landfill that is permitted to receive asbestos material.

- **Lead-Based Paint (LBP)**

Surfaces in several of the on-site buildings were determined to be painted with LBP. In addition, as noted by MDE, the soil immediately adjacent to the buildings may also have become contaminated with lead as a result of paint flaking or past paint removal. It was assumed that LBP would be left in place during demolition. C&D wastes containing lead-based paint must be tested using the Toxicity Characteristic Leaching Procedure (TCLP) test and be disposed as a hazardous waste if the results exceed 5 milligrams of lead per liter. However, the relatively small quantity of LBP is not expected to cause the demolition debris to be classified as hazardous waste. In addition, contractors completing demolition activities should be made aware of the potential presence of LBP and are required to comply with the OSHA Lead in Construction regulations (29CFR1926.62) including pre-job medical surveillance, respiratory protection, etc.

Similarly, it was assumed that the LBP present in the silos would be left in place during the backfilling of the silos. In addition, it has been assumed that concrete and masonry from demolition of on-site structures would be crushed and utilized in backfilling the silos. The LBP present in the silos and in the crushed concrete/masonry debris is not expected to present a concern with respect to groundwater.

The surface soils within ten feet of the base of each building with exterior LBP will be sampled for lead impacts. The impacted soil will be removed for off-site disposal.

- **Mold**

Fungal (mold) growth was observed on the ceiling of Bungalows 2 and 4, and throughout the Machine Shop/Missile Assembly Building. Water damaged materials were observed in the Kennels, the Shower/Other Building to the rear of the Barracks, and the Generator Building. These materials are not subject to special handling or disposal requirements during demolition. However, contractors completing the demolition activities should be made aware of the potential presence of mold within the buildings and the resulting demolition wastes.

- **Mercury**

Thermostats containing mercury were observed in Bungalows 2 through 7 and the Machine Shop/Missile Assembly Building. These thermostats should be removed and disposed of prior to any demolition activities. Similarly, fluorescent lights should also be removed and segregated for proper waste disposal prior to building demolition.

- **Above Ground Storage Tanks (ASTs)**

Two ASTs remain on the Site. The ASTs include a 275-gallon tank situated along the northern side of the former machine shop / missile assembly building and a 300-gallon tank situated along the southwestern corner of the former barracks. These tanks were believed to have been used to store heating oil to heat the on-site structures. There were no indications of a release from either of these tanks. Notification to the Montgomery County Fire and Rescue Service should be made prior to removal of the tanks, and the tanks should be removed and disposed of according to applicable regulations.

- **Containerized Petroleum Wastes**

Nine 55-gallon drums and two 5-gallon containers were observed in the generator building. The 55-gallon drums included 2 that were labeled as “non-PCB containing waste”, two that were empty, and five that were labeled as “lubricating oil”. The two 5-gallon containers were labeled as “petroletherm”. These drums should be removed and disposed of in accordance with applicable regulations.

- **Hydraulic Lifts**

During the building materials inspection, it was confirmed that hydraulic oil still remains in each of the three hydraulic systems. Each of the hydraulic oil reservoirs was accessed, and samples of the hydraulic oil were submitted for analysis to determine if it is PCB-containing. While there were no PCBs detected in the hydraulic oil, the oil will need to be drained from each of the three hydraulic systems and containerized for off-site disposal. The hydraulic lift equipment would be dismantled for recycle as scrap metal.

- **Transformers**

Three pad-mounted transformers were identified on the site. These transformers were identified in the NIST PCB inventory as non-PCB containing. Once removed from service and de-energized, these transformers should be opened and the oil drained to drums for disposal prior to demolition. The oil should be tested to confirm the absence of PCBs. Assuming that testing confirms the absence of PCBs, the transformer shells would be recycled as scrap metal.

- **Stored Chemical Products**

Consumer end packaged paints, solvents, oils, and greases were observed within many of the onsite buildings. These materials should be removed and disposed of in accordance with applicable regulations. It is assumed that these materials may need to be disposed as hazardous waste.

4.3 Underground Utilities

Prior to initiating any subsurface investigations, ARM determined the location of utilities in the project area using the Miss Utility system and through interviews with NIST personnel. NIST did not have a site plan that indicated the locations of utilities but some information on utility locations was provided by NIST employees familiar with the site. Additionally, ARM utilized a magnetometer and Ground Penetrating Radar to clear each boring location. While clearing the boring locations, ARM was able to determine the location of four underground utilities. The underground utilities that were identified include a water main coming onto the site, two electric lines and a communications line. The approximate location of each identified utility is shown on **Figure 5** and **Figure 6**. It should be noted that other utilities may be present. It is assumed that underground utilities that will no longer be used will be abandoned in place.

4.4 Demolition Costs

The City has not yet determined which buildings will be demolished and which buildings may be renovated for re-use. ARM provides the following cost estimates for budgetary purposes only and assumes that all existing structures will be demolished.

The following assumptions were used in developing the demolition cost estimate:

- Estimates of the quantities of demolition wastes are presented in **Table 4**.
- The contents of the silos will be removed for recycling or disposal to allow for backfill of the silo volume. The hydraulic equipment will be drained and dismantled. All paint will be left in place. The bottom floor of each silo will be drilled to provide for drainage to prevent the accumulation of rainwater.
- The concrete walls of the silos will be demolished to a depth of ten feet below grade.
- Underground utilities that are not in use will be abandoned in place.
- Metal will be recycled with no net salvage value.
- Following the removal of structures, the Site will be regarded and hydro-seeded with turf grass and mulch.
- Surface soils within ten feet of the exterior walls of buildings with LBP will be excavated to one-foot and disposed off-site as non-hazardous waste. While these costs have been included in ARM's estimate, they are subject to change if soil samples are collected to determine if lead contamination is present in the surface soils due to the LBP.
- The silos were estimated to require 2,300 cubic yards of fill each.
- An estimated 2,000 cubic yards of rubble for fill will be available from the other demolished buildings.
- Approximately 5,000 cubic yards of additional fill will need to be brought on-site.

Table 5 summarizes the costs for hazardous material abatement, building demolition, the disposal of non-hazardous materials and the restoration of the Site.

5.0 RECOMMENDATIONS

1. The City may want to enter the Site into the Voluntary Clean-up Program to receive a formal MDE Site approval, to ensure protection from federal liability under CERCLA and to satisfy any potential public concern.
2. The City may also wish to request documentation that the MDE has determined that the City has the status of an Inculpable Person prior to acquisition of the Site. This may trigger the additional \$2,000 fee associated with an expedited Inculpable Person approval.
3. The VCP process can take years to complete and to expedite redevelopment/re-use of the Site, acceptance into the program could be pursued in parallel with the process of obtaining Federal approval of the land transfer.
4. Negotiate the following mitigation issues to be addressed by NIST prior to the transfer of the property:
 - a) the removal and disposal of ASTs,
 - b) the off-site disposal of containerized petroleum products and wastes,
 - c) the emptying and subsequent off-site disposal of oil from the hydraulic lifts,
 - d) the removal and disposal of consumer end chemical products used or stored by NIST in buildings on-site, and
 - e) the removal from service, de-energizing of transformers and the subsequent handling and disposal of associated oils and fluids (if not needed for re-use of buildings).
5. Request additional information on electrical service and utilities to determine whether existing transformers and utilities will be needed to support the City's planned facilities at the Site or whether these could and should be abandoned by NIST prior to property transfer.
6. Update the Phase 1 Environmental Site Assessment shortly before the anticipated transaction date. Ideally, the updated Phase 1 would be completed after NIST operations on the Site have ceased, and after NIST has addressed the remaining issues.

FIGURES

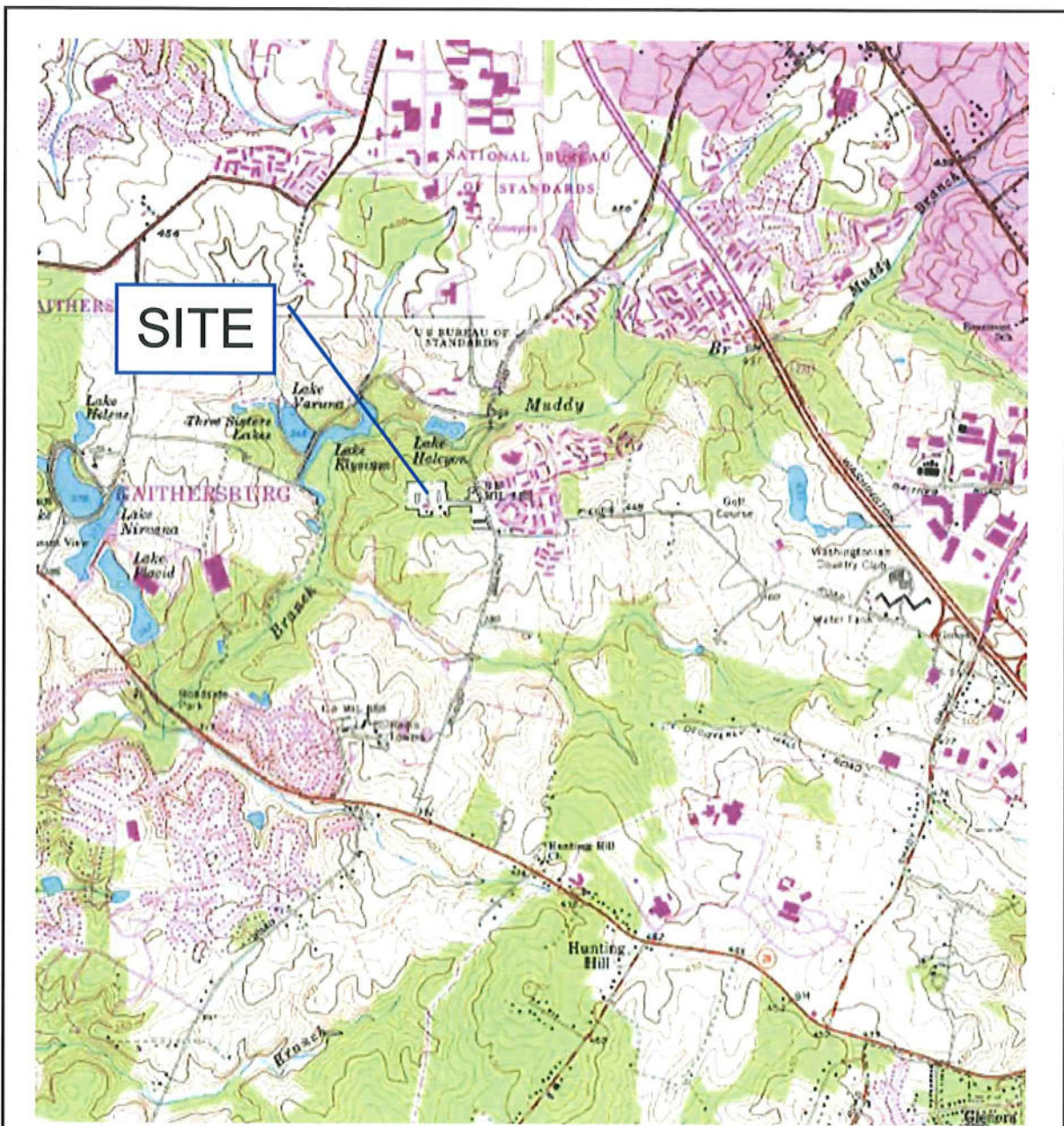


Figure 1

USGS: Rockville Quadrangle
Maryland - Virginia
Photo-Revised 1984



Site Location Plan

Former Nike W-42
Rockville Launch Area
Gaithersburg, MD

April 2008

M07125




ARM Group Inc.
Earth Resource Engineers and Consultants
5650 Syphon Woods Road • Suite 120
Columbia, MD • Phone: (410) 740-0040



Figure 2



Building Locations	
Former Nike Battery W-92 Gaithersburg, MD	
April 2008	 ARM Group Inc. Earth Resource Engineers and Consultants 8965 Guilford Road • Suite 100 Columbia, MD 21046 • Phone: (410) 290-7775
M07125	

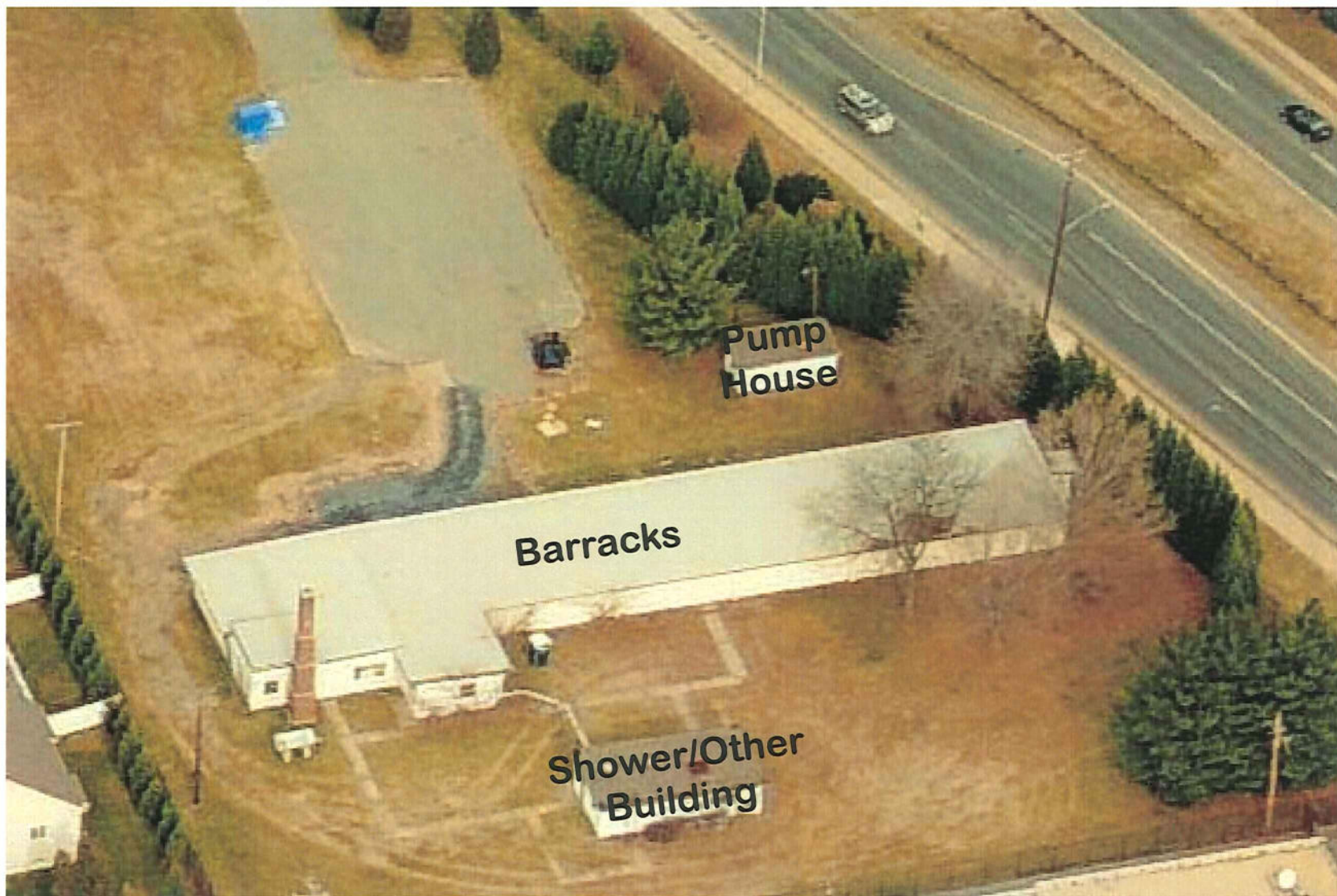


Figure 3

Building Locations

Former Nike Battery W-92
Gaithersburg, MD

April 2008

M07125



ARM Group Inc.
Earth Resource Engineers and Consultants
8965 Guilford Road ■ Suite 100
Columbia, MD 21046 ■ Phone: (410) 290-7775

DIRECTORY

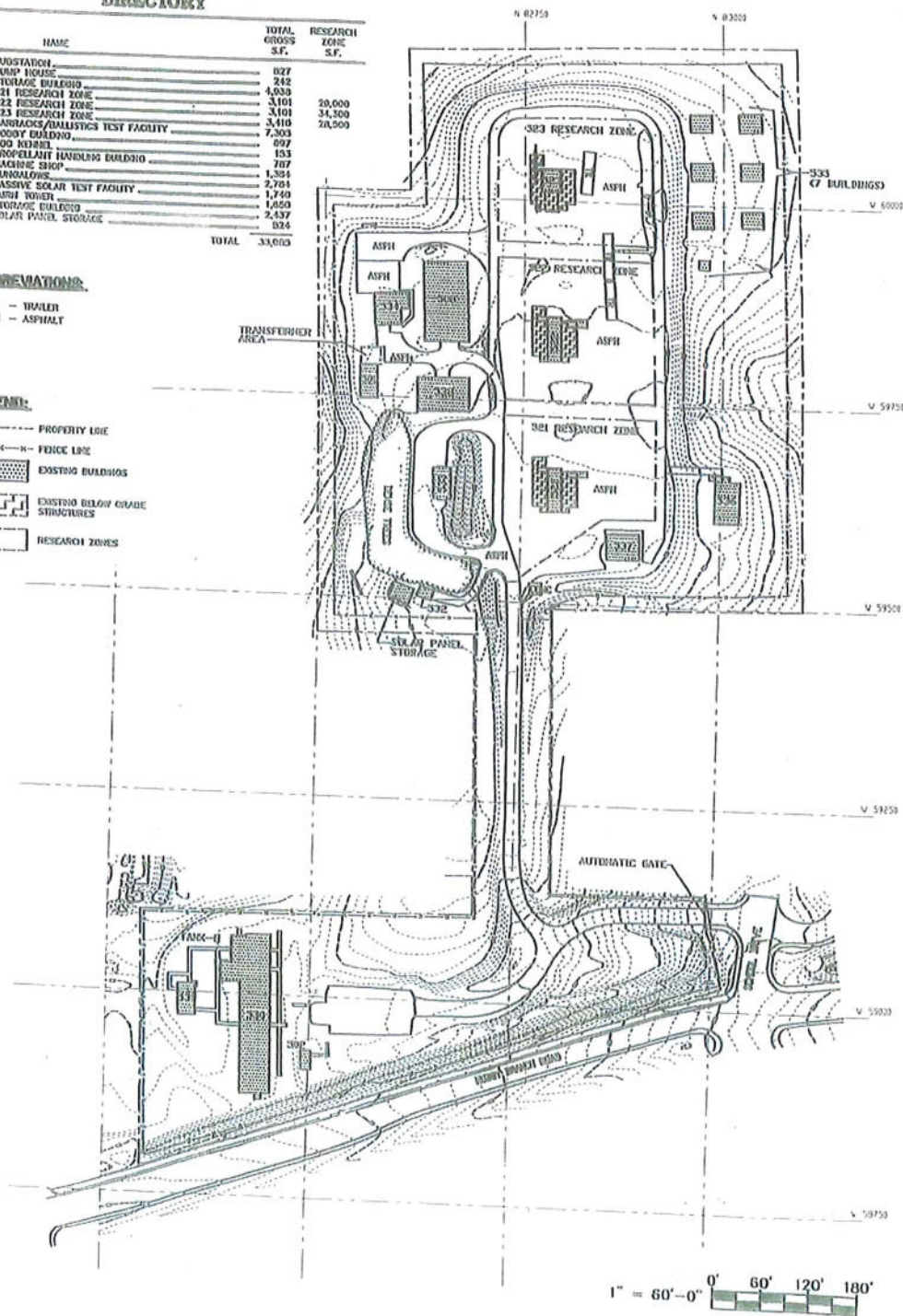
Bldg. No.	NAME	TOTAL GROSS S.F.	RESEARCH ZONE S.F.
001	SUBSTATION	027	
002	PUMP HOUSE	242	
003	STORAGE BUILDING	4,030	
004	021 RESEARCH ZONE	3,101	20,000
005	022 RESEARCH ZONE	3,101	34,300
006	023 RESEARCH ZONE	3,410	20,500
007	BAROMETER/DALUSICS TEST FACILITY	7,303	
008	MOODY BUILDING	697	
009	000 KIDNEY	153	
010	PROPELLANT HANDLING BUILDING	707	
011	MACHINE SHOP	1,354	
012	DANALOWS	2,701	
013	PASSIVE SOLAR TEST FACILITY	1,740	
014	DATA TOWER	1,850	
015	STORAGE BUILDING	2,437	
016	SOLAR PANEL STORAGE	024	
	TOTAL	33,000	

ABBREVIATIONS:

TR - TRAILER
ASPH - ASPHALT

LEGEND:

- PROPERTY LINE
- - - FENCE LINE
- [Hatched Box] EXISTING BUILDINGS
- [Dashed Box] EXISTING BELOW GRADE STRUCTURES
- [Solid Box] RESEARCH ZONES



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BSN Hspvq Jbd/

Fbal Sftpsvaf Foljof fad too Dpovmbod
9:76 Hvjagpe Spbo ó Tvjfd 211
Dpsn cjb- NE 32157 A Q pof.; 3521° 3: 1.8886



- ■ ■ ■ ■ Underground Electric Line
■ ■ ■ ■ ■ Underground Communications Line



Figure 5

Underground Utility Locations

Former Nike Battery W-92
Gaithersburg, MD

April 2008

M07125




ARM Group Inc.
Earth Resource Engineers and Consultants
8965 Guilford Road • Suite 100
Columbia, MD 21046 • Phone: (410) 290-7775



- - - - - Underground Electric Line
- - - - - Underground Water Line



Figure 6

Underground Utility Locations	
Former Nike Battery W-92 Gaithersburg, MD	
April 2008	 ARM Group Inc. Earth Resource Engineers and Consultants 8965 Guilford Road ■ Suite 100 Columbia, MD 21046 ■ Phone: (410) 290-7775
M07125	

TABLES

Table 1
Existing Building Inventory
Former Nike Missile Site W-92
Gaithersburg, Maryland

Building	Building No. on Site Plan	Building Size (ft ²)	Building Description	Photo Number in Appendix A
Solar Research Building	536	575	16' x 26' building ranging from 10' to 20' in height. 8' x 10' annex located at the rear of the building. Structure is wood or steel framed with wood siding.	9
Storage Building-1	538	1,400	27' x 53' Storage building, 20'-25' in height.	10, 11
Storage Building-2	508	2,000	40' x 54' Storage building, 20'-25' in height.	12, 13
Machine Shop/Missile Assembly Building	534	1,100	Approximately 27' x 37' CMU building with a 16' x 7' extension on North side of building. Mechanical and Electrical systems are present inside the building, including a furnace. A brick smokestack is attached to the outside of the building, an AST is located adjacent to this smokestack.	14, 15
Propellant Handling/ Research Building	533	375	23' x 16' CMU building	16
Generator Building	501	800	Building is approximately 20' x 40', demolition to include the removal of a transformer located outside the building in a gated area and the removal of electrical conduit.	17, 18
Dog Kennels	532	500	11' x 12' Building	19
Barracks	530	8,000	8000 ft ² main structure. Smokestack attached to building, AST located near rear of building. 2 smaller structures approximately 500 ft ² each located near main structure.	20, 21, 22
Pump House	-	300	Adjacent to the barracks building	23
Shower/Other Building	531	500	40' x 25' building located adjacent to the barracks building.	24
Solar Panel Storage	-	370	23' x 16' wood frame building with metal sheeting exterior.	19

Table 2
Hazardous Building Materials Inventory
Former Nike Missile Site W-92
Gaithersburg, Maryland

Building	Building No. on Site Plan	Building Size (ft ²)	Identified Concerns
Silo-1	521	2,650	1. Yellow paint is LBP 2. Hydraulic Equipment
Silo-2	522	2,650	1. Yellow paint is LBP 2. PCB detected in wipe sample from floor 3. Hydraulic Equipment
Silo-3	523	2,740	1. Hydraulic Equipment 2. Yellow paint is LBP
Bungalow-1	535	100	
Bungalow-2	535	180	1. Fungal growth on ceiling 2. Thermostats containing mercury
Bungalow-3	535	180	Thermostats contain mercury
Bungalow-4	535	180	1. Fungal growth on ceiling. 2. Thermostats contain mercury.
Bungalow-5	535	180	Thermostats contain mercury
Bungalow-6	535	180	Thermostats contain mercury
Bungalow-7	535	180	Thermostats contain mercury
Solar Research Building	536	575	1. Water damage 2. Roof presumed to be ACM
Storage Building-1	538	1,400	Potential sub-slab vapors
Storage Building-2	508	2,000	Potential sub-slab vapors
Propellant Handling/ Research Building	533	375	1. TCE detected in soil gas. 2. Roof presumed to be ACM

Table 1
Existing Building Inventory
Former Nike Missile Site W-92
Gaithersburg, Maryland

Building	Building No. on Site Plan	Building Size (ft ²)	Building Description	Photo Number in Appendix A
Silo-1	521	2,650	Entrance is a Fire Stairway Training CMU above-grade structure approximately 14' x 17' and 20' high with steel stairs. 50' x 50' underground area with concrete slabs and walls. Steel plates exist at missile launch area. Large steel doors to the surface exist above missile launch area. Reservoirs, pumps and piping for hydraulic missile lifts	1, 2
Silo-2	522	2,650	18' x 8' CMU above-grade structure acts as entrance. 50' x 50' underground area with concrete slabs and walls. Steel plates exist at missile launch area. Large steel doors to the surface exist above missile launch area. Reservoirs, pumps and piping for hydraulic missile lifts	3, 4
Silo-3	523	2,740	18' x 8' CMU above-grade structure acts as entrance. 50' x 50' underground area with concrete slabs and walls. Steel plates exist at missile launch area. Large steel doors to the surface exist above missile launch area. Reservoirs, pumps and piping for hydraulic missile lifts	5, 6
Bungalow-1	535	100	Six bungalows measuring approximately 15' x 12', two are wood frame, two are brick, one is CMU, and one is constructed of treated railroad ties. A smaller brick building is adjacent to the bungalows.	7, 8
Bungalow-2	535	180		7, 8
Bungalow-3	535	180		7, 8
Bungalow-4	535	180		7, 8
Bungalow-5	535	180		7, 8
Bungalow-6	535	180		7, 8
Bungalow-7	535	180		7, 8

Table 2
Hazardous Building Materials Inventory
Former Nike Missile Site W-92
Gaithersburg, Maryland

Building	Building No. on Site Plan	Building Size (ft ²)	Identified Concerns
Machine Shop/Missile Assembly Building	534	1,100	<ol style="list-style-type: none"> 1. White and green floor tiles and associated mastic are ACMs 2. Dark green paint is LBP 3. Hole in roof has caused fungal growth throughout and significant water damage 4. TCE detected in soil gas 5. Thermostats contain mercury 6. AST behind building 7. Roof presumed to be ACM
Generator Building	501	800	<ol style="list-style-type: none"> 1. Black floor tiles and associated mastic are ACMs 2. White paint is LBP 3. Water damage 4. Several drums present. 5. Roof presumed to be ACM
Dog Kennels	532	500	<ol style="list-style-type: none"> 1. Paint assumed to be LBP 2. Water damage. 3. Roof presumed to be ACM
Barracks	530	8,000	<ol style="list-style-type: none"> 1. Dark blue paint is LBP. 2. TCE detected in soil gas. 3. AST behind building 4. Roof presumed to be ACM
Pump House	-	300	Roof presumed to be ACM
Shower/Other Building	531	500	<ol style="list-style-type: none"> 1. Black floor tiles and associated mastic are ACMs 2. Green paint is LBP 3. Water damage. 4. Roof presumed to be ACM
Solar Panel Storage	-	370	<ol style="list-style-type: none"> 1. Paint assumed to be LBP 2. Water damage. 3. Roof presumed to be ACM

Table 3
Building Re-Use/Renovation Mitigation Costs
Former Nike Missile Site W-92
Gaithersburg, Maryland

Item Description	Quantity	Unit	Unit Cost	Item Cost
Asbestos Removal/Disposal				
Floor Tiles	2,000	SF	\$10	\$20,000
Lead Based Paint Removal				
Barracks (Bldg 530)	2160	SF	\$10	\$21,600
Machine Shop/Missile Assembly (Bldg 534)	1440	SF	\$10	\$14,400
Generator Building (Bldg 501)	600	SF	\$10	\$6,000
Kennels (Bldg 532)	184	SF	\$10	\$1,840
Impacted Soil	385	TON	\$65	\$25,025
Mold	1	LS	\$3,000	\$3,000
Mercury	1	LS	\$500	\$500
Aboveground Storage Tanks	2	LS	\$2,500	\$5,000
Petroleum Wastes	30	Drums	\$100	\$3,000
Stored Chemical Products	10	Drums	\$250	\$2,500
Estimated Construction Cost				\$80,365
Contingency (30%)				\$24,000
Project management cost (10%)				\$8,000
Estimated Total Construction Cost				\$112,365

Assumptions:

- 1 Interior asbestos tile removed. Possible asbestos-containing roofing material is to be left in service
- 2 No LBP removal in silos
- 3 Approximately 25% of paint is LBP
- 4 One foot of soil within 10 feet of each LBP building removed for non-hazardous disposal
- 5 Hydraulic oil drained from equipment but equipment left in place
- 6 Pad-mounted transformers remain to provide electric service to existing buildings
- 7 Mercury thermostats removed but mercury-containing fluorescent bulbs remain in service
- 8 Petroleum waste disposal includes hydraulic oil to be drained from silo lift equipment

Table 4
Demolition Debris Quantity Estimates
Former Nike Missile Site W-92
Gaithersburg, Maryland

	BUILDING				
	Substation/ Generator Bldg. (Bldg. 501)	Missile Assembly/ Machine Shop (Bldg. 534)	Machine Shop Addition (Bldg. 534)	Kennels (Bldg. 532)	SE Bldg. (Solar Power Storage)
BUILDING OVERALL					
Length, ft	20	27	16	11	23
Width, ft	40	37	7	12	16
Height, ft	10	15	15	8	12
Floors, #	1	1	1	1	1
Internal volume, cu. yd.	296	555	62	39	164
WALLS, MASONRY					
Lineal, ft	120	128	46	46	78
Height, ft	10	15	15	8	12
Area, sq. ft.	1,200	1,920	690	368	936
Thickness, inch	0.00	8.00	8.00	8.00	8.00
Adjustment, internals	115%	115%	115%	115%	115%
Volume in place, cu. ft	0	1,472	529	282	718
Volume in place, cu. yd	0	55	20	10	27
Bulking factor	135%	135%	135%	135%	135%
Volume demo, cu ft	0	1,987	714	381	969
Volume demo, cu yd	0	74	26	14	36
Volume demo, tons	0	106	38	20	52
Material	Metal	CMU	CMU	CMU	C&D
WALLS, OTHER					
Lineal, ft	120	128	46	46	78
Height, ft	10	15	15	8	12
Area, sq. ft.	1,200	1,920	690	368	936
Thickness, inch	4.00	4.00	4.00	4.00	4.00
Adjustment, internals	150%	150%	150%	150%	150%
Volume in place, cu. ft	600	960	345	184	468
Volume in place, cu. yd	22	36	13	7	17
Bulking factor	150%	150%	150%	150%	150%
Volume demo, cu ft	900	1,440	518	276	702
Volume demo, cu yd	33	53	19	10	26
Volume demo, tons	23	36	13	7	18
Material	C&D	C&D	C&D	C&D	C&D
FLOOR					
Number	1	1	1	1	1
Area, sq. ft.	800	999	112	132	368
Thickness, inch,	12.00	12.00	12.00	12.00	12.00
Volume in place, cu. ft	800	999	112	132	368
Volume in place, cu. yd	30	37	4	5	14
Bulking factor	135%	135%	135%	135%	135%
Volume demo, cu ft	1,080	1,349	151	178	497
Volume demo, cu yd	40	50	6	7	18
Volume demo, tons	58	72	8	10	26
Material	Cone	Cone	Cone	Cone	Cone
ROOF					
Length, ft	20	27	16	11	23
Width, ft	40	37	7	12	16
Area, sq. ft.	800	999	112	132	368
Thickness, inch	4.00	4.00	4.00	4.00	4.00
Volume in place, cu. ft	267	333	37	44	123
Volume in place, cu. yd	10	12	1	2	5
Bulking factor	150%	150%	150%	150%	150%
Volume demo, cu ft	400	500	56	66	184
Volume demo, cu yd	15	19	2	2	7
Volume demo, tons	10	12	1	2	5
Material	C&D	C&D	C&D	C&D	C&D
TOTALS					
C&D, Volume demo, cu. yd	48	72	21	13	69
C&D, Volume demo, tons	33	48	14	9	74
Cone, Volume demo, cu. yd	40	50	6	7	18
Cone, Volume demo, ton	58	72	8	10	26
CMU, Volume demo, cu. yd		74	26	14	
CMU, Volume demo, ton		106	38	20	

Table 4
Demolition Debris Quantity Estimates
Former Nike Missile Site W-92
Gaithersburg, Maryland

	BUILDING				
	Storage Building (Bldg. 538)	Storage Building (Bldg. 508)	Fire Training (Entrance 521)	Propellant Handling Building (Bldg. 533)	Solar Research Building (Bldg. 536)
BUILDING OVERALL					
Length, ft	27	40	14	35	55
Width, ft	53	54	17	18	20
Height, ft	25	25	20	15	15
Floors, #	1	1	1	1	1
Internal volume, cu. yd.	1,325	2,000	176	350	611
WALLS, MASONRY					
Lineal, ft	160	188	62	106	150
Height, ft	25	25	20	15	15
Area, sq. ft.	4,000	4,700	1,240	1,590	2,250
Thickness, inch	0.00	0.00	8.00	8.00	8.00
Adjustment, internals	115%	115%	115%	115%	125%
Volume in place, cu. ft	0	0	951	1,219	1,875
Volume in place, cu. yd	0	0	35	45	69
Bulking factor	135%	135%	135%	135%	135%
Volume demo, cu ft	0	0	1,283	1,646	2,531
Volume demo, cu yd	0	0	48	61	94
Volume demo, tons	0	0	68	88	135
Material	Sheet Metal	Sheet Metal	CMU	CMU	Wood
WALLS, OTHER					
Lineal, ft	160	188	62	106	150
Height, ft	25	25	20	15	15
Area, sq. ft.	4,000	4,700	1,240	1,590	2,250
Thickness, inch	4.00	4.00	4.00	4.00	4.00
Adjustment, internals	150%	150%	150%	150%	150%
Volume in place, cu. ft	2,000	2,350	620	795	1,125
Volume in place, cu. yd	74	87	23	29	42
Bulking factor	150%	150%	150%	150%	150%
Volume demo, cu ft	3,000	3,525	930	1,193	1,688
Volume demo, cu yd	111	131	34	44	63
Volume demo, tons	75	88	23	30	42
Material	C&D	C&D	C&D	C&D	C&D
FLOOR					
Number	1	1	1	1	1
Area, sq. ft.	1,431	2,160	238	630	1,100
Thickness, inch	12.00	12.00	12.00	12.00	12.00
Volume in place, cu. ft	1,431	2,160	238	630	1,100
Volume in place, cu. yd	53	80	9	23	41
Bulking factor	135%	135%	135%	135%	135%
Volume demo, cu ft	1,932	2,916	321	851	1,485
Volume demo, cu yd	72	108	12	32	55
Volume demo, tons	103	156	17	45	79
Material	Cone	Cone	Cone	Cone	Cone
ROOF					
Length, ft	27	40	14	35	55
Width, ft	53	54	17	18	20
Area, sq. ft.	1,431	2,160	238	630	1,100
Thickness, inch	0.00	0.00	4.00	4.00	4.00
Volume in place, cu. ft	0	0	79	210	367
Volume in place, cu. yd	0	0	3	8	14
Bulking factor	150%	150%	150%	150%	150%
Volume demo, cu ft	0	0	119	315	550
Volume demo, cu yd	0	0	4	12	20
Volume demo, tons	0	0	3	8	14
Material	Metal	Metal	C&D	C&D	C&D
TOTALS					
C&D, Volume demo, cu. yd	111	131	39	56	177
C&D, Volume demo, tons	75	88	26	38	191
Cone, Volume demo, cu. yd	72	108	12	32	55
Cone, Volume demo, ton	103	156	17	45	79
CMU, Volume demo, cu. yd			48	61	
CMU, Volume demo, ton			68	88	

Table 4
Demolition Debris Quantity Estimates
Former Nike Missile Site W-92
Gaithersburg, Maryland

	BUILDING				
	Annex (Bldg. 536)	Silos (3) 521, 522, 523	Silo Entrance (Bldg. 522,523)	Bungalows (Bldg. 535)	Barracks (Bldg. 530)
BUILDING OVERALL					
Length, ft	8	50	18	15	80
Width, ft.	10	50	8	12	100
Height, ft	10	25	18	8	12
Floors, #	1	1	1	1	1
Internal volume, cu. yd.	30	2,315	96	53	3,556
WALLS, MASONRY					
Lineal, ft	36	200	52	54	360
Height, ft	10	4	18	8	12
Area, sq. ft.	360	800	936	432	4,320
Thickness, inch	8.00	8.00	8.00	8.00	8.00
Adjustment, internals	115%	115%	115%	115%	115%
Volume in place, cu. ft	276	613	718	331	3,312
Volume in place, cu. yd	10	23	27	12	123
Bulking factor	135%	135%	135%	135%	135%
Volume demo, cu ft	373	828	969	447	4,471
Volume demo, cu yd	14	31	36	17	166
Volume demo, tons	20	44	52	24	238
Material	Wood	Cone	CMU	1/2 CD 1/2 CMU	CMU
WALLS, OTHER					
Lineal, ft	36	200	52	54	360
Height, ft	10	4	18	8	12
Area, sq. ft.	360	800	936	432	4,320
Thickness, inch	4.00	4.00	4.00	4.00	4.00
Adjustment, internals	150%	150%	150%	150%	150%
Volume in place, cu. ft	180	400	468	216	2,160
Volume in place, cu. yd	7	15	17	8	80
Bulking factor	150%	150%	150%	150%	150%
Volume demo, cu ft	270	600	702	324	3,240
Volume demo, cu yd	10	22	26	12	120
Volume demo, tons	7	15	18	8	81
Material	C&D	C&D	C&D	C&D	C&D
FLOOR					
Number	1	1.3	1	1	1
Area, sq ft.	80	3,250	144	180	8,000
Thickness, inch,	12.00	0.00	12.00	12.00	12.00
Volume in place, cu. ft	80	0	144	180	8,000
Volume in place, cu. yd	3	0	5	7	296
Bulking factor	135%	135%	135%	135%	135%
Volume demo, cu ft	108	0	194	243	10,800
Volume demo, cu yd	4	0	7	9	400
Volume demo, tons	6	0	10	13	576
Material	Cone	Cone	Cone	Cone	Cone
ROOF					
Length, ft	8	50	18	15	80
Width, ft	10	50	8	12	100
Area, sq. ft.	80	2,500	144	180	8,000
Thickness, inch	4.00	4.00	4.00	4.00	4.00
Volume in place, cu. ft	27	833	48	60	2,667
Volume in place, cu. yd	1	31	2	2	99
Bulking factor	150%	150%	150%	150%	150%
Volume demo, cu ft	40	1,250	72	90	4,000
Volume demo, cu yd	1	46	3	3	148
Volume demo, tons	1	31	2	2	100
Material	C&D	C&D	C&D	C&D	C&D
TOTALS					
C&D, Volume demo, cu. yd	25	x 3 206	x 2 57	x 6.5 153	268
C&D, Volume demo, tons	28	139	39	145	181
Cone, Volume demo, cu. yd	4	92	14	59	400
Cone, Volume demo, ton	6	132	21	84	576
CMU, Volume demo, cu. yd			72	54	166
CMU, Volume demo, ton			103	78	238

Table 4
Demolition Debris Quantity Estimates
Former Nike Missile Site W-92
Gaithersburg, Maryland

	BUILDING			
	Shower Building (Bldg. 531)	Concrete Slabs Silo 1 (523)	Concrete Slabs Silo 2 (522)	Concrete Slabs Bldg #2 (521)
BUILDING OVERALL				
Length, ft	40	90	110	45
Width, ft	25	30	30	36
Height, ft	12			
Floors, #	1			
Internal volume, cu. yd.	444			
WALLS, MASONRY				
Lineal, ft	130	240	280	162
Height, ft	12			
Area, sq. ft.	1,560	2,700	3,300	1,620
Thickness, inch	8.00	12.00	12.00	6.00
Adjustment, internals	115%	100%	100%	100%
Volume in place, cu. ft	1,196	2,700	3,300	810
Volume in place, cu. yd	44	100	122	30
Bulking factor	135%	135%	135%	135%
Volume demo, cuft	1,615	3,645	4,455	1,094
Volume demo, cu yd	60	135	165	41
Volume demo, tons	86	194	238	58
Material	CMU	Cone	Cone	Cone
WALLS, OTHER				
Lineal, ft	130	240	280	162
Height, ft	12	0	0	0
Area, sq. ft.	1,560	0	0	0
Thickness, inch	4.00	0.00	0.00	0.00
Adjustment, internals	150%	0%	0%	0%
Volume in place, cu. ft	780	0	0	0
Volume in place, cu. yd	29	0	0	0
Bulking factor	150%	0%	0%	0%
Volume demo, cu ft	1,170	0	0	0
Volume demo, cu yd	43	0	0	0
Volume demo, tons	29	0	0	0
Material	C&D	C&D	C&D	C&D
FLOOR				
Number	1	0	0	0
Area, sq ft.	1,000	0	0	0
Thickness, inch,	12.00	12.00	12.00	12.00
Volume in place, cu. ft	1,000	0	0	0
Volume in place, cu. yd	37	0	0	0
Bulking factor	135%	135%	135%	135%
Volume demo, cu ft	1,350	0	0	0
Volume demo, cu yd	50	0	0	0
Volume demo, tons	72	0	0	0
Material	Cone	Cone	Cone	Cone
ROOF				
Length, ft	40	90	110	45
Width, ft	25	30	30	36
Area, sq. ft.	1,000	2,700	3,300	1,620
Thickness, inch	4.00	4.00	4.00	4.00
Volume in place, cu. ft	333	900	1,100	540
Volume in place, cu. yd	12	33	41	20
Bulking factor	150%	150%	150%	150%
Volume demo, cu ft	500	1,350	1,650	810
Volume demo, cu yd	19	50	61	30
Volume demo, tons	13	34	41	20
Material	C&D	C&D	C&D	C&D
TOTALS				
C&D, Volume demo, cu. yd	62	50	61	30
C&D, Volume demo, tons	42	34	41	20
Cone, Volume demo, cu. yd	110	135	165	41
Cone, Volume demo, ton	158	194	238	58
CMU, Volume demo, cu. yd				
CMU, Volume demo, ton				

Table 5
Building Demolition Costs
Former Nike Missile Site W-92
Gaithersburg, Maryland

Item Description	Quantity	Unit	Unit Cost	Item Cost
Plan Preparation/Permitting	1	LS	\$10,000	\$10,000
Pre-Demolition Survey	1	LS	\$5,000	\$5,000
Hazmat Abatement				
Hydraulic Equipment Removal	3	LS	\$5,000	\$15,000
Transformer Removal	3	LS	\$2,500	\$7,500
Aboveground Storage Tanks	2	LS	\$2,500	\$5,000
Mercury	1	LS	\$2,500	\$2,500
Petroleum Wastes	30	Drums	\$100	\$3,000
Stored Chemical Products	10	Drums	\$250	\$2,500
Site Preparation/Erosion Control	1	LS	\$5,000	\$5,000
Demolition				
Buildings	270,918	CF	\$0.28	\$75,857
Foundation/Slabs	30,995	SF	\$5	\$156,525
Silo Walls	600	LF	\$165	\$99,000
Disposal				
Concrete/CMU (on-site crush and backfill)	2,000	CY	\$25	\$50,000
Demolition Debris	1,300	Ton	\$65	\$84,500
Metal (recycled)	-	Ton	\$0	\$0
Backfill				
Silo Backfill- Net Fill	5,000	CY	\$5	\$25,000
Grading/Restoration	5	AC	\$1,000	\$5,000
Seeding/Revegetation	200	MSF	\$36.50	\$7,300
Estimated Construction Cost				\$558,682
Contingency (30%)				\$168,000
Project management cost (10%)				\$56,000

Estimated Total Construction Cost

\$782,682

Assumptions:

- 1 Non-Friable Asbestos to be left in place during demolition
- 2 Lead-Based Paint to be left in place during demolition
- 3 Unit demolition costs from RS Means Heavy Construction Cost Data
- 4 Remove silo walls to depth of 4 feet
- 5 Concrete/masonry crushed on-site for silo backfill
- 6 Scrap metal recycled at no net cost
- 7 Unit cost for Seeding/Revegetation is per thousand sq feet (MSF)- tractor spreader

APPENDIX A



MARYLAND DEPARTMENT OF THE ENVIRONMENT

1800 Washington Boulevard • Baltimore MD 21230

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Martin O'Malley
Governor

Shari T. Wilson
Secretary

Anthony G. Brown
Lieutenant Governor

Robert M. Summers, Ph.D.
Deputy Secretary

March 26, 2008

James D. Amoult, P.E.
Acting City Manager
City of Gaithersburg, Maryland
31 South Summit Avenue
Gaithersburg, MD 20877-2098

Re: Formerly Used Defense Site Nike W-92, Rockville Launch Area property
770 Muddy Branch Road
Gaithersburg, Maryland.

Dear Mr. Amoult:

The Land Restoration Program ("LRP") of the Maryland Department of the Environment ("Department") has reviewed the Phase I Environmental Site Assessment dated October 2007, the Site Characterization and Risk Assessment Report dated November 6, 2007 and the Indoor Air Sample Results dated March 3, 2008 prepared by the ARM Group, Inc. for the Formerly Used Defense Site Nike W-92, Rockville Launch Area property located at 770 Muddy Branch Road, Gaithersburg, Maryland.

On July 11, 2007 and January 16, 2008, LRP Personnel met with representatives from the City of Gaithersburg and the ARM Group to discuss the above referenced site. It is the Department's understanding that the City of Gaithersburg is considering acquiring the 13.71-acre Rockville Launch Area property for use as a community facility and/or park and requested the LRP's assistance in reviewing the documents prepared by the ARM Group in the context of a potential purchase and use as recreational facilities and preparing a future application to the Voluntary Cleanup Program ("VCP"). Based on this request, the LRP has prepared the enclosed comments.

James D. Amoult, P.E., Acting City Manager
Page 2

It should be noted that the Department's comments are based on environmental conditions documented by the above referenced reports at the time the report was completed. Since the Rockville Launch property is currently occupied by National Institute of Standards and Technology (NIST) environmental conditions may be influenced by the ongoing use of the site. A toxicological evaluation of the soil and groundwater data was not conducted; therefore, the Department cannot comment on the statements regarding risk included in the Phase II ESA. The Department did conduct a review of the indoor air samples collected from the existing buildings and noted that assuming a commercial current use, the results are within acceptable noncancer and cancer risk levels as determined by the Department. The Department cannot guarantee that additional sampling will not be required for a future VCP application for the Rockville Launch property. If you have any questions regarding the enclosed comments or other aspects of the VCP program, please contact Barbara Brown, the project manager, or me at 410-537-3493.

Sincerely,

*CLct\$0A 9 * &***&££ JorLVV*

James R. Carroll, Administrator
Land Restoration Program

Enclosure

cc: Mr. Eric S. Magdar, ARM Group, Inc.
Mr. Horacio Tablada
Ms. Barbara H. Brown



Land Restoration Program

Formerly Used Defense Site Nike W-92, Rockville Launch Area Property Document Review 770 Muddy Branch Road Gaithersburg, Maryland

General Comments

- (1) It should be noted that the documents were evaluated based on site conditions at the time the assessments were completed and environmental conditions could be affected by on going site activities by the current owners.
- (2) It is highly recommended that the current property owner remove and properly dispose of all hydraulic oil that may be present in the three hydraulic systems within the launch silos as described on page 11 of the Phase II ESA. These systems should be removed or properly abandoned in accordance with the appropriate local, State, and federal regulations.
- (3) For the purposes of the VCP, the application should include a Phase I that is less than year old and a Phase II with sampling data less than year old. It is the Department's understanding that if the City of Gaithersburg decides to purchase the property, the acquisition process may take two years or more to complete. It should be noted that depending on the date a VCP application is submitted the Department may require an updated Phase I and/or Phase II to complete the application evaluation.
- (4) The LRP review did not consider issues such as lead paint or asbestos within the buildings or missile silos. However, it should be noted that as noted in Section 4.2 Limited Lead Based Paint (LBP) Inspection of the Phase II ESA lead based paint was noted in several areas and flaking exterior paint may contaminate surface and subsurface soil located around the building.

Phase I Comments

- (1) Contained statement that it was prepared in accordance with "American Society for Testing and Materials (ASTM) Standard E-1527-05, "Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process" as required by the Section 7-506(a)(1) of the Environment Article for a VCP application. The Phase I would be acceptable for VCP purposes.

Phase II Comments

- (1) The Phase II was conducted incorporating suggested modifications to the sampling plan as discussed during July 11, 2007 meeting with VCP staff.

- (2) The report appears complete with all required supporting documentation such as boring logs, laboratory data sheets, etc. and would be acceptable for VCP purposes.
- (3) Section 5.2.1 Soil: The forth-bulleted item discusses the ATC for chromium in Maryland and states, "The highest concentration of Arsenic observed at the site was 29,600 ug/kg." This statement should probably read, "The highest concentration of *total chromium* observed at the site was 29,600 ug/kg."
- (4) A complete toxicological evaluation was not conducted on the soil and ground water data provided; therefore, the Department cannot comment on the conclusions in Section 5.2 Summary of Risk.

Indoor Air Sampling Results

- (1) Mark Mank, LRP Toxicologist and VCP Section Head reviewed the indoor air sampling results. Based on this review, the Department concurs with the conclusions that soil gas concentrations do not present an unacceptable risk to human health under a commercial or residential land use as the buildings are currently configured on site. Additionally, indoor air results, assuming a commercial current use, are within acceptable noncancer and cancer risk levels as determined by the Department.
- (2) It should be noted that conclusions regarding the indoor air data have a high degree of uncertainty given the limited data and potential high variability associated with air data. Additional soil gas and/or indoor air sampling may be required if the site applies to the VCP, due to a variety of factors such as impact from on-going site activities, existing building modifications, proposed land use, location of new construction, updates to EPA Region III, RBCs etc.
- (3) As discussed at the January 16, 2008 meeting, due to the close proximity of residential homes to the southern property boundary, if the property is entered into the VCP, the potential migration of soil vapors off-site due to natural gradients or due to pathways created by existing utilities may require additional site research and/or targeted soil gas sampling.

APPENDIX B

Description of Photographs

1. Looking south at Silo 1
2. The hydraulic pump in Silo 1
3. Looking east at Silo 2
4. The interior of Silo 2
5. Looking south at Silo 3
6. The stairwell leading down to Silo 3
7. Looking north at the Bungalows
8. Looking east at the Bungalows
9. Looking north at the Solar Research Building
10. Looking south at Storage Building 1
11. Interior of Storage Building 1
12. Looking south at Storage Building 2
13. Interior of Storage Building 2
14. Looking north at the Machine Shop/Missile Assembly Building
15. Looking south at the Machine Shop/Missile Assembly Building
16. Looking east at the Propellant Handling/Research Building
17. Looking south at the Generator Building
18. Looking south at the transformer adjacent to the Generator Building
19. Aerial view of the Dog Kennels and Solar Panel Storage Building
20. Aerial view of the Barracks
21. Interior of the Barracks looking east
22. Looking north at the AST behind the Barracks
23. Looking east at the Pump House
24. Aerial view of the Shower/Other Building



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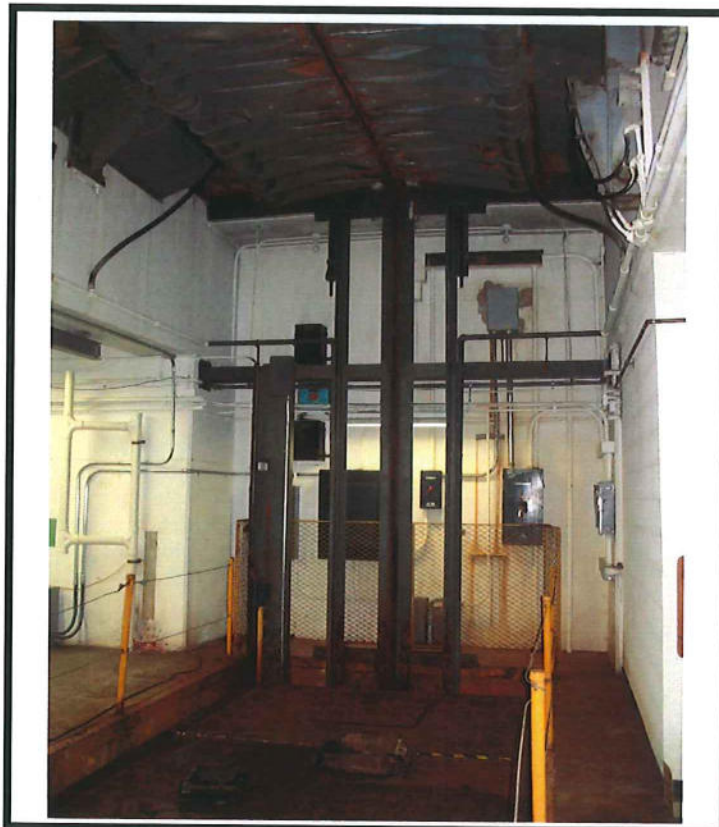


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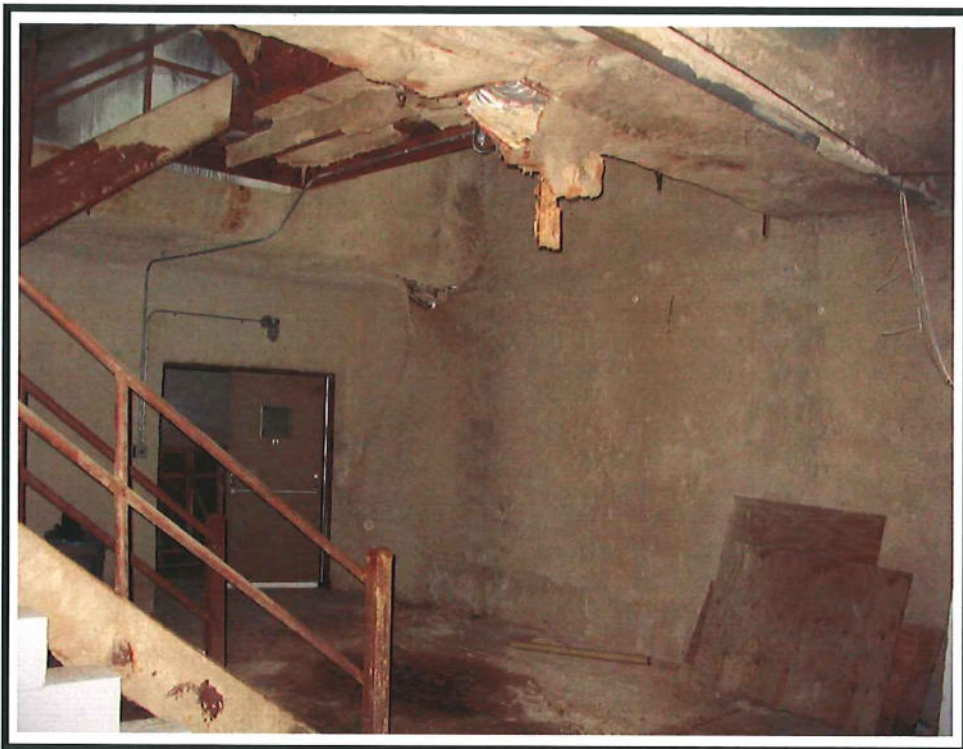
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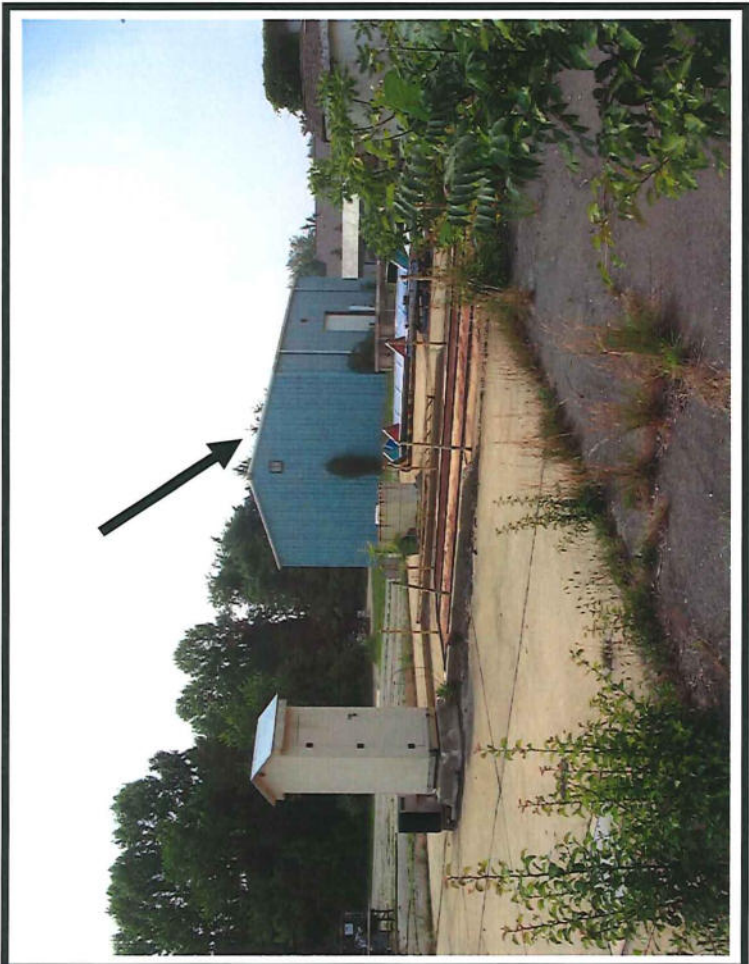
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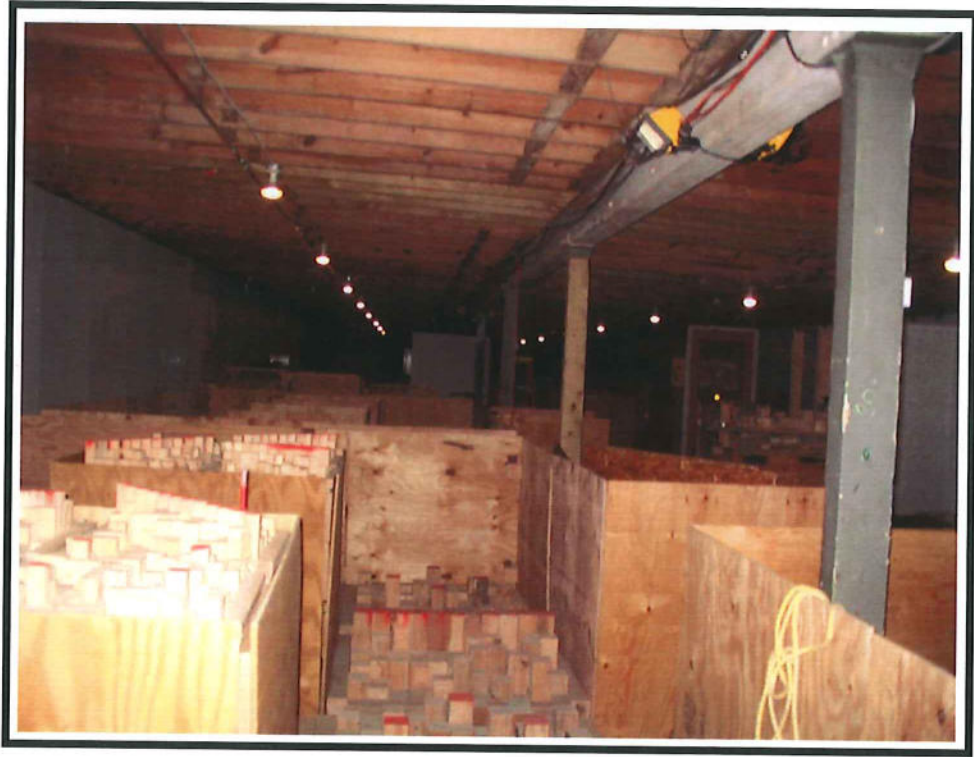
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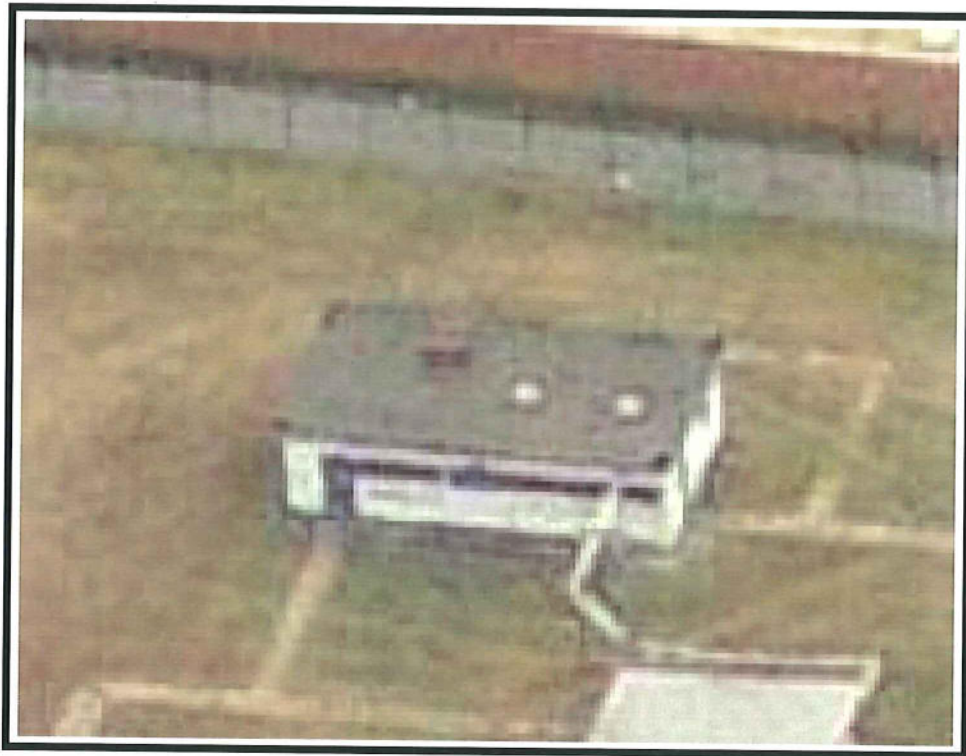
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